

# Poultry Production, Management and Marketing System at Selected Districts of Kafa and Benchmaji Zone, South West Ethiopia

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## Abstract

The study was conducted to determine village chicken feed and feeding practice, housing system, production performance and marketing systems and to assess the existing diseases and predators at selected districts of Kafa and Bench Maji Zone, from four representative districts; Adeyo, Chena, Gimbo and Guraferda Six farmer kebeles (2 from high land, 2 from mid-altitude and 2 from low land agro-ecologies which were boka, butta, beyamo, wareta, biftu-03 and kujja). An attempt was made to study by selecting a total of 150 households who involved in chicken production. The data were collected by semi structured questionnaire, personal observation and interview. Purpose of supplementary feed (39.33%) giving is for egg yield. Major green forage feed (42%) is different edible green grass like “keppo”. About 70% of respondents use Household scraps for poultry feed. Source of water for village birds 41% is spring water. Type of container used to supply water is clay pot (45.33%). Trained of washing water supplying materials every times (25.33%) and 23.33% of respondents never. Housing system of village chickens at study area was 41% perch in the house and 11% separate shelter. From this study 87% of the households kept local chicken followed by 8% kept cross and local together and 5% of the households kept exotic and local under the same management. Average age of first egg lying of chicken was 6 months, average number of eggs per clutch was 14, and average clutch size per chicken per year was 3. The average price of adult cock, hen and young chicken were reached 75 birr, 54 birr and 38 birr respectively and the price of egg was reached 2 birr during non-fasting period and 2.25 birr at festival time. The major (50%) Causes of village chickens mortality is diseases followed by (27%) predator. The most devastating chicken disease is Newcastle disease (NCD) 52%, followed by fowl pox (18%). To date there were no any comprehensive studies conducted in the study Weredas. Hence, will help to give important baseline information to improve the existing village chickens feed and feeding practice, housing system, production performance and marketing systems as well as causes of mortality by improving the management practice, poultry breeds with a holistic and multidisciplinary support of services like; health, husbandry, research, extension, training and educating the framers are viable options to improve the livelihood of the households.

**Keywords:** Feeding, Housing, production, marketing, Diseases, Kafa and Benchmaji Zone

## 1. INTRODACTION

The total chicken population in the country is estimated at 51 million CSA (2014). The majority (98%) of these chickens are maintained under traditional system with little or no input for feeding Mushi et al., 2005. The primary objective in feeding poultry is to secure the most economical gains in weight during growth and fattening, and the most economical production of eggs throughout the laying period Nigusie et al., 2010. The feed resource for rural chicken production in Ethiopia is scavenged, and consists of household waste, anything edible found in the immediate environment, and small amounts of grain supplements provided by the women Tadelle et al., 2003b.

Village chicken production fits quite well with the conditions of rural households due small feed cost, space requirement and low price of the animals Solomon (2003). According to Halima et al., 2007 b about 99% of chicken owners of North-West Amhara provided supplementary feed to village birds once per day, mainly during feed shortage seasons. Study conducted by Dessie et al., 2013. on village chickens shows the major feed is grains produced on-farm, and feed availability is high during the dry season and harvesting period from December to March, and from November to January.

Poultry of all types require housing that will protect them from the predator, wind and rain, as well as the effects of rapid changes in temperature. The house should be dry at all times, and provide good ventilation while being free from draughts. Village chicken housing system in Ethiopia is mostly perch in the house, perch in the kitchen, perch in the veranda and separate shelter Melkamu (2013) and Melkamu (2013).

Agricultural sector is the corner stone of the economic and social life of the people. The sector employs 80-85% of the population and contributes 40% of the total growth domestic product. According to Halima et al., 2007 b, Animal production in general and chicken production as the one component of agriculture covers 40% of the agricultural output playing an important role in the national economy as it contributes 13-16%

of the total GDP. Rural poultry in Ethiopia represents a significant part of the national economy in general and the rural economy in particular and contributes 98.5% and 99.2% of the national egg and chicken meat production, respectively Tadelles et al., 1996, Abera (2000).

House hold simple rearing in backyard is with inadequate feeding and health care. However, the population number of chicken flock is small Tadelles et al., 2003b, Melkamu (2013). Such production system may result in slow growing and poor layer of egg. The indigenous chickens are good scavengers and foragers well adapted to harsh environmental conditions and their minimal space requirements make chicken rearing a suitable activity Bishop et al., 1995. Modern poultry production started in Ethiopia some year ago mainly in research stations and colleges. The activities of these institutions mainly produced on the introduction of exotic breeds to the country and distribution of these breeds to the farmers including management, feeding housing and health care practices Gueye et al., 2005.

The production of indigenous village chickens is characterized by many advantages such as good egg and meat flavor, hard shells, high dressing percentages and especially low cost. In tropical areas village chickens health problems is high due to environmental factors like high temperature and humidity, topography structure of sloppy area exposed to flood so easy to infect soil born diseases, stress factor and air born diseases. And the other major reason is the lack of weakness of animal health services (Assegid et al., 2000).

Poultry production, management and marketing practice in kaffa and benchmaji zone, can be characterized by extensive poultry production system (under smallholder) which provide people benefits in food security (meat and egg) and for source of income for poor households but the production and productivity of village chicken is low due to flock mortality by disease, predator and poor management practice. In the two zones the poultry population is 1,486,175 from which 942,291 are found in kaffa zone and 543,884 are found in benchmaji zone (Tadelles et al., 2003b). Even if the population is high, the farmers do not benefited the sector, because of traditional production system, predator challenge, disease prevalence; quality feed shortage and poor management practices.

According to (Halima et al., 2007 b) the major problem affecting chicken production is poor feeding practices. Similar constraints have been found elsewhere in the highlands of Ethiopia, Haile (2007a). Due to poor agricultural extension service, however, there is no documented and enough information pertaining to the village chickens feed resource base management. Adeyo, chena, Gimbo and Guraferda are districts of kaffa and Benchmaji zone in which chicken production is practiced under smallholder which provide people benefits in good security (meat and egg) and for source of income. Even if the population is high, the farmers do not benefited the sector, for this the contribution of poor poultry housing system has its own role.

Therefore this study was design to assess feed, feeding, watering, housing, production, marketing and to enquire base line information on the current status of major diseases and predator for village chickens in Kafa and Benchmaji Zone, Southern, Nation, Nationality and Peoples Region, south west Ethiopia.

## 2. STUDY METHODOLOGY

### 2.1. Description of study areas

The study was conducted at south nation nationality and peoples region, kaffa and Benchmaji zone, Adeyo, Chana, Gimbo and Guraferda districts. The study area was selected considering agro-ecology, socio economic significance of chicken production and population of indigenous chickens. The study areas will be selected considering agro-ecology, socio economic significance of chicken production and population of indigenous chickens.

**Table 1.** Description of the study area

| No | Measurements            | Adeyo             | Gimbo           | Chena                 | Guraferda               |
|----|-------------------------|-------------------|-----------------|-----------------------|-------------------------|
| 1  | Altitude                | 1800-2800         | 800-1800        | 1851-2219             | 750-1800                |
| 2  | Main soil Type          | Clay, loam, sandy | sandy clay loam | Clay, loam, clay loam | Sandy, sandy clay, clay |
| 3  | Mean annual rainfall    | 1150              | 1170            | 1190                  | 1145                    |
| 4  | Mean annual Temperature | 19.5              | 18.5            | 21.5                  | 30.5                    |
| 5  | Average land size       | 2.75              | 1.7             | 1.8                   | 2.1                     |
| 6  | Latitude (NS):          | 07°17'316"        | 07°26'71"       | 07°08'42"             | 06°48'66"               |
| 7  | Longitude (EW):         | 036°22'243"       | 036°20'54"      | 035°48'05"            | 035°14'96"              |

### 2.2. Sampling techniques, data collection and statistical analysis

Primary and secondary data were collected for the study. A huge amount of farm level primary data was collected from the study area individual farmers through personal interview using a well-defined- structured questionnaire with close and open ended questions. Secondary data were obtained from different published

research journals, books and unpublished theses, CSA Agricultural sample survey, various reports of FAO and World Bank publications and assessing different records and reports of livestock and fishery bero on feeding, housing, Production and marketing system. A Multi-stage sampling procedure (purposive & random) was applied for the study, hence the study area was divided in to three agro-ecologies based on altitude as; highland (>2500masl), mid-altitude (1500-2500masl) and low-land (<1500masl). Then two farmer kebeles (the lowest administrative structure in the country) (boka and butta of adiyio district at kaffa zone) from the highland, two farmer kebeles from low-land (bifitu03 and kujja of guraferda district at benchmaji zone) and two farmer kebeles from mid-altitude (beyamo of gimbo district, waretta of chena district at Kaffa zone) were selected purposively. Therefore a total of six representative kebeles were selected. Agro ecology representation and chicken production potential were the main criterion considered in the selection of study sites.

A simple random sampling technique was applied to choose 25 village chicken owner respondents in each of the selected kebeles of highland, mid-land and low-land which is 50 respondents from each agro ecology which is a total of 150 respondents (chicken owner households) were interviewed using a pre-tested structured questionnaire for this study.

The qualitative and quantitative data sets were analyzed using appropriate statistical analysis software (Statistical Package for Social Sciences. 2010). More specifically descriptive statistics and General Linear Model (GLM) were used for this study. Tables and figures were used to present summary statistics such as percentages.

### 3. RESULT AND DISCUSSION

#### 3.1. Socio-Economic characteristics of the Study area

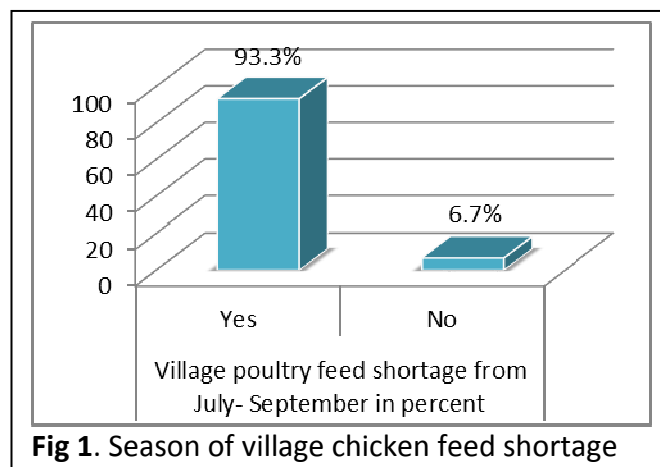
**Table 1:** Socio-economic status of respondent chicken owners of the study area (N=150)

| Variable                      | N   | Category                    | Proportion (%) |
|-------------------------------|-----|-----------------------------|----------------|
| Sex                           | 150 | Male                        | 79             |
|                               |     | Female                      | 21             |
| Educational Status            | 150 | Illiterate                  | 39             |
|                               |     | Religious                   | 11             |
|                               |     | Primary education           | 12             |
|                               |     | secondary education & above | 9              |
| Family size                   | 150 | Reading and writing         | 29             |
|                               |     | <15 years                   | 35.7           |
| Marital status of house holds | 150 | >15 years                   | 64.3           |
|                               |     | Married                     | 89             |
|                               |     | Single                      | 9              |
|                               |     | Divorced                    | 0.5            |
|                               |     | Widowed                     | 1.5            |

The household characteristics of interviewed village chicken owner households were presented in table 1. Accordingly; from the total of 150 interviewed village chicken owners, (79%) were males and (21%) were females. The average age of respondents was 38 years (ranged 15-61). Regarding education level of respondents; 39% were illiterate, 21% had basic education (Reading & writing), 12% had primary education and 9% had secondary education & above. The number of illiterates observed in this study was lower than the reported 82.1% for North-West Ethiopia (Halima et al., 2007 b). The result of the study indicated that 79 % of interviewed households were male headed and 11% female headed. Regarding marital status; 89% of interviewed households were married. However, 24.3 % of chicken owners having watering trough responded that they never cleaned watering trough.

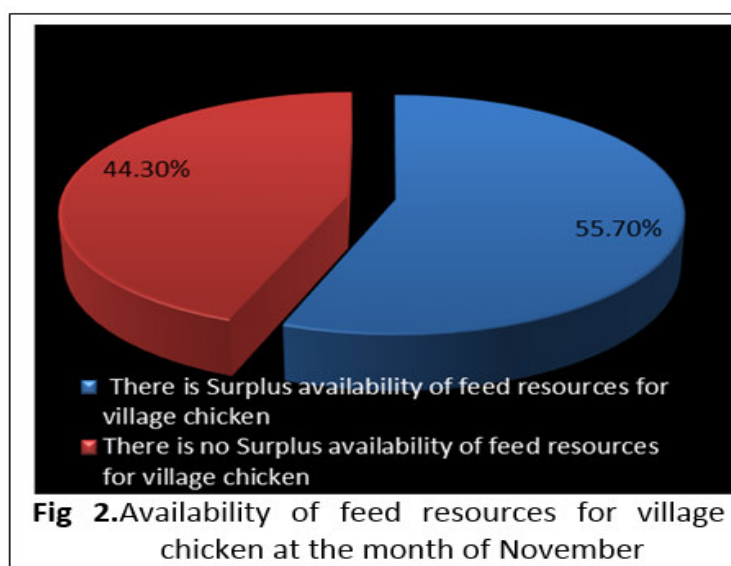
#### 3.2. Feed and feeding system

Village chicken owners at Kafa and Bench Maji Zone supply little or nothing by the end of dry season when the feed resource is becoming scarce in the house. Most critical season of the year for provision of supplementary feed in the study area is from July to September which is a season most of cereals do not harvest from the farm and the available one also sow because of the season of rain which is favorable for cereal production.



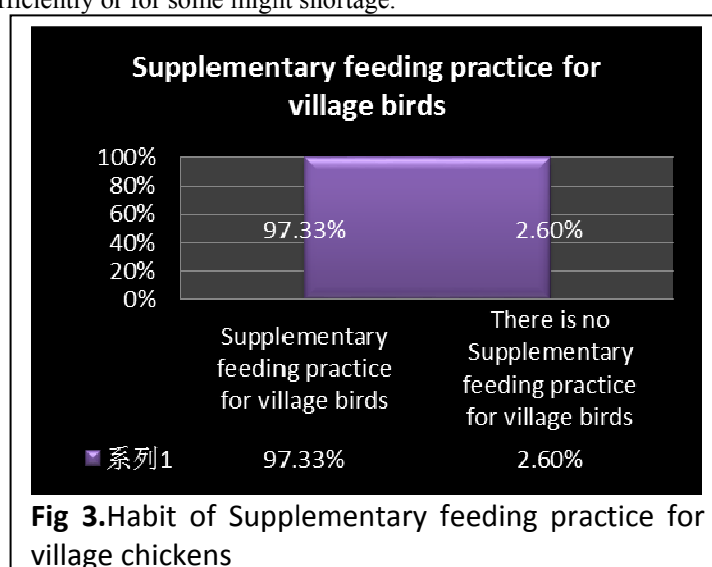
**Fig 1.** Season of village chicken feed shortage

This result is in line with, Fisseha (2007) study result at Bure woreda, north-west Amhara. Furthermore 95% of the respondents indicated that major time of feed shortage is June to August (Samson et al., 2010).



**Fig 2.** Availability of feed resources for village chicken at the month of November

According to the respondent availability of supplementary feed resources found surplus at the month of November were 55% whereas the rest (44.30%) responded that supplementary feed was not found surplus which might found sufficiently or for some might shortage.



**Fig 3.** Habit of Supplementary feeding practice for village chickens

Lack of feed supplementation is one of the characteristics of free-ranging backyard poultry Production system (Gueye et al., 2003). However, in this study 97.33 % of the respondents practiced Supplementary feeding. Another study in Awassa Zuria by (Asefa et al., 2007) also indicated that 95 % of the households offer supplementary feed. Study report at Dale, Wonsho and Lokaabaya *Weredas* (small administrative unit in Ethiopia) of Southern Ethiopia by, CSA (2014), shows 98% of respondents practiced supplementary feeding. However, majority of the farmers 98%practicedsupplementary feeding systems (Samson et al., 2010).

The major supplementary feed of the study area summarized in the above figure. The major supplementary feed in the surveyed area includes feed leftover in the house including “*Kocho*”(bakedenset)(60.67%),maize(18.67%),wheat(10.67%),other rains(5.33%),rice(3.33),rice and maize together(1.33%). In most cases, provision of feeds to chicken was seasonal. It also depends on the quantity and availability of the resources in the house.

**Table 2.** Grains feed for village chicken

| No | Grains feed for village chicken | %     |
|----|---------------------------------|-------|
| 1  | Maize                           | 19.33 |
| 2  | Sorgume                         | 2     |
| 3  | rice                            | 6     |
| 4  | Wheat                           | 12.6  |
| 5  | Maize and Sorgume               | 6     |
| 6  | Maize and rice                  | 7.33  |
| 7  | Sorgume and rice                | 8     |
| 8  | Maize and Wheat                 | 9.33  |
| 9  | All at different times          | 29.33 |

According to respondents grains feed for village birds at Kaffa and Benchmaji Zone were: maize(19.33%),sorgum(2%),rice(6%),wheat(12.67%), maize and sorgum(6%), maize + rice (7.33%), sorgum +rice(8%), maize +wheat(9.33%),all these at different time(29.33%). This particular study agrees with Study conducted at central and western highlands of Ethiopia the major supplementary feeds are wheat and maize grains, but also include kitchen wastes and bone meal (Dessie et al., 2013). Study on Village Based Chicken production and utilization system in mid Rift valley of Oromia shows uses greater than 90% maize, wheat, sorghum and household waste products as the main supplement of chicken feed (Samson et al., 2010).

**Table 3.** Time of supplementary feed giving for village chickens

| No | Time of supplementary feed giving for village birds   | %     |
|----|---|-------|
| 1  | In the morning before they went out for scavenging  | 42.86 |
| 2  | In the evening after scavenging   | 5.49  |
| 3  | In the afternoon while scavenging   |       |
| 4  | Any time during the day time  | 42.86 |
| 5  | In the morning before they went out for scavenging and In the evening after scavenging                                    | 4.4   |
| 6  | In the morning before they went out for scavenging and In the afternoon while scavenging                                  | 2.43  |
| 7  | In the morning before they went out for scavenging, In the evening after scavenging and In the afternoon while scavenging | 1.96  |

According to the respondent the trend of giving supplementary feed at Kaffa and benchmaji zone is in the morning before they go out for scavenging(42.86%),In the evening after scavenging(5.49%),any time during

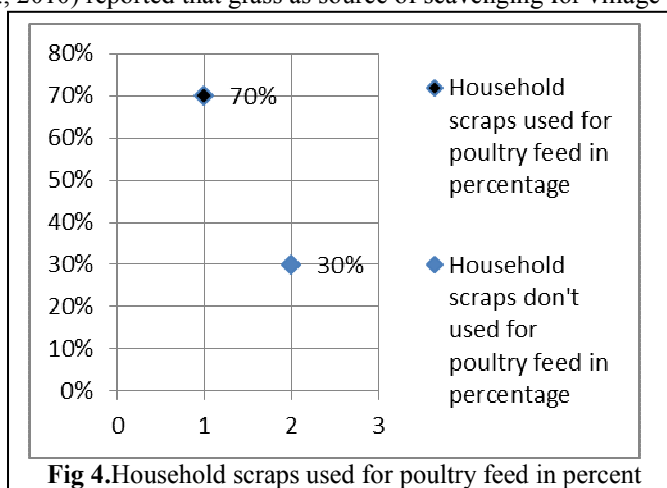
day time(42.86%), morning before they go out for scavenging and In the evening after scavenging(4.40%); morning before they go out for scavenging and in the afternoon while scavenging(2.2%), morning before they go out for scavenging, In the evening after scavenging and in the afternoon while scavenging(2.2%).

| <b>Table 4. Purpose of supplementary feed giving</b> |                                      |       |
|--|--------------------------------------|-------|
| No   | Purpose of supplementary feed giving | %     |
| 1  | Egg yield                            | 39.33 |
| 2  | Meat yield                           | 22    |
| 3  | Broodiness(during incubation)        | 0.67  |
| 4  | Egg and meat yield                   | 23.33 |
| 5  | Age                                  | 2     |
| 6  | All the above mentioned              | 12.67 |

According to the respondents the basics of giving supplementary feed for village birds at Kaffa and benchmaji zone were for egg yield (39.33%), meat yield (22%), broodiness (during incubation) (0.67%), egg & meat yield(23.33%), age(2%), all of the above(12.67%).

| <b>Table 5. Major Green forage village chickens feed</b> |   |       |
|--|---|-------|
| No   | Major green forage village chickens feed  | %     |
| 1  | Cabbage                                   | 4     |
| 2  | Different edible green grass like “keppo” | 42    |
| 3  | Different cereals leafe                   | 7.33  |
| 4  | Enset leafe                               | 4.67  |
| 5  | Weeds leafe                               | 12    |
| 6  | Different fruit leafe                     | 6.67  |
| 7  | All at different ways                     | 23.33 |

Major green forage village birds feed at Kaffa and benchmaji zone were : different edible green grass including *keppo*(42%), weeds leafe(12%),different cereals leafe(7.33%), different fruit leafs(6.67%),enset leafe(4.67%) , cabbage(4%), all at different ways(23.33%).Similar research conducted at Awassa Mekonnen (2007) also reported that in the dry season the chicken ate different parts of the *Enset (Ensete ventricosum)* including the corn. Their study also shows *Enset (Ensete ventricosum)* and cabbage were among the major food crops grown in the surveyed area leading chickens to compete for the same food source with the family. Similarly, (Samson et al., 2010) reported that grass as source of scavenging for village chicken in Ethiopia.

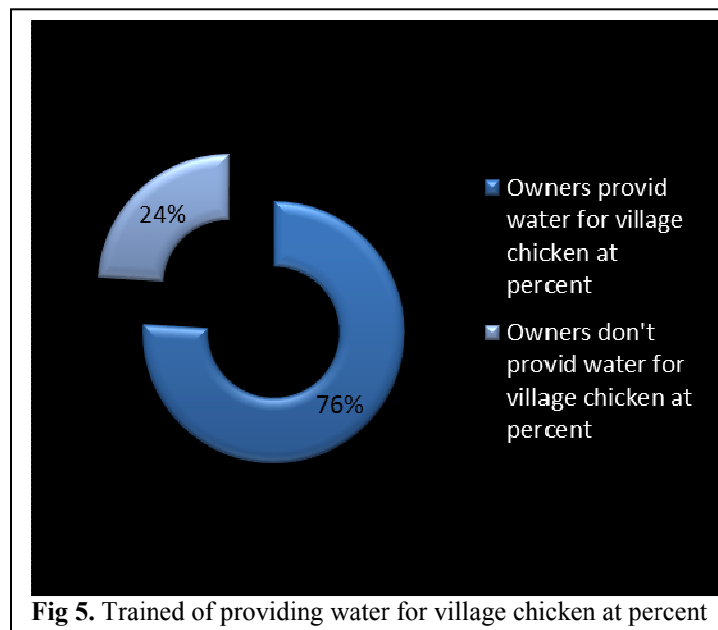


**Fig 4.**Household scraps used for poultry feed in percent

According to the farmers respond, 70% of them use home human consumption leftovers feed as a source of village birds feed alone or with others feed simultaneously. Similarly, Dessie et al., 2013 reported that human feed leftover (house scrub) as source of scavenging for village chicken in Ethiopia. Thus, the smallholder chicken production goes eco-friendly because they convert insects and household leftovers to valuable cheap and quality animal protein to the family.



### 3.3. Watering



**Fig 5.** Trained of providing water for village chicken at percent

Majority of village bird's owners (76%, 114 respondents) of the study area provided water to village birds.

**Table 6.**Frequency of offering water for village chicken

| No | Frequency of offering water | %     |
|----|-----------------------------|-------|
| 1  | once                        | 34.23 |
| 2  | Twice                       | 10.07 |
| 3  | Three times                 | 5.37  |
| 4  | adlib                       | 50.33 |

Concerning the frequency of watering, most of bird producers (50.3%) used adlibitum type (making water available every time). (Halima et al., 2007b) also reported that most of bird owners in North-West Amhara provided water to village birds. According to Samson et al., 2010, 47% providing throughout the day, 14% once per day, 18% twice a day, 16% three times a day, 5% four times a day and the source of water is 66% tap, 15% river water, 6% bore hall and others 13%. During the dry season, tap water is provided to chickens every day in Homi village (Dessie et al., 2013).

**Table 7.** Source of water for village chickens

| No | Source of water for village              | %    |
|----|--|------|
| 1  | Rain water                               | 14   |
| 2  | River water                              | 21   |
| 3  | Spring water                             | 41   |
| 4  | Pipe water                               | 2.67 |
| 5  | Locally constructed underground water    | 3.33 |
| 6  | Tap water                                | 9.33 |
| 7  | From all of the above at different times | 8.67 |

The current study revealed that the major sources of water for village chicken in the study area were spring water (41.33%), river water (21.33%), rain water (14%), tap water (9.33%), pipe water (2.67%), locally constructed underground water (2.67%), in different combinations of these (8.67%). The result is different from the report of Fisseha (2007) that most of village bird source of water is river water (30.4%) and spring water (28.5%). Results revealed that 92.5% of the households provide water for their chickens' regularly. The result is also different from the report of Solomon et al., 2013. Water sources used by the households in Metekel zone, Northwest Ethiopia were river (30.5%), spring (20.8%), tap water (19.5%), well water (12.3%) and in different combinations of these sources (16.9%). Water is freely available during the wet

season from rainwater collected on the ground. In Dembel Gobeya village, water is in short supply during the dry season and the only source is spring water, Dessie et al., 2013).

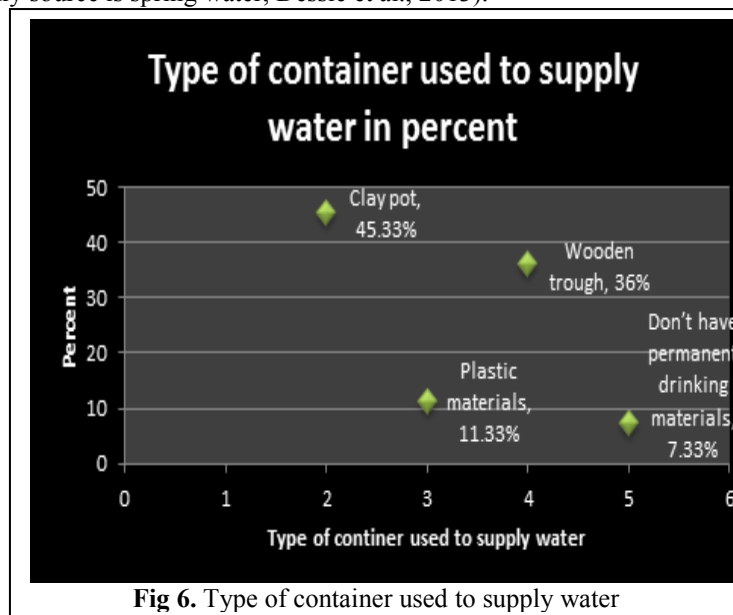


Fig 6. Type of container used to supply water

The current study indicated that majority of chicken owners (92.62%) had watering trough. Broken clay material, locally called “shekila”, (45.33%), wooden trough (36%) and plastic made trough (11.33%) were the most widely used types of watering troughs in the study area. The result is in agreement with (Dessie et al., 2004) study at Bure Woreda, North-west Amhara that broken clay material, locally called “shekila”, wooden trough and plastic made trough at the order from the highest percent to lowest percent were the most widely used types of watering troughs in the study area. The result is contradict with the study report conducted at Dale, Wonsho and Lokaabaya Weredas of SNNPRS by Mekonnen (2007) that plastic and clay dish containers, respectively at the order from the highest percent to lowest percent were the most widely used watering materials. In Dembel Gobeya village, only water is provided on feeders that are cleaned occasionally, while feed is provided on the ground (Dessie et al., 2013).

Table 8. Trained of washing water supplying materials

| No | Trained of washing water supplying materials | %     |
|----|--|-------|
| 1  | Never  | 23.3  |
| 2  | once   | 44    |
| 3  | Twice  | 5.33  |
| 4  | More than two times                          | 2.33  |
| 5  | Cleaned every times                          | 25.33 |

Regarding the frequency of cleaning watering trough, 44% of respondents cleaned once per week, 23.33% never cleaned per week, 5.33% cleaned twice per week, 2% cleaned more than two times per week, 25.33% of village birds owners cleaned watering trough every day. The result is different from study result at Dale, Wonsho and Lokaabaya Weredas (small administrative unit in Ethiopia) of Southern Ethiopia by Mekonnen (2007)) that only 45.7% of the respondents wash the container regularly and the remaining 50 % wash the container occasionally and 4.4% of the respondents never washed the container. The result is different from study result at bure woreda (small administrative unit in Ethiopia), north-west Amhara 50% of chicken owners cleaned sometimes when they remembered it and 23.9% cleaned every day. In Homi village, feed and water are provided on feeders that are cleaned every two to three days (Dessie et al., 2013).

### 3.4. Housing system

The majority of farmers were housed their chickens by sharing the same room with perch i.e. 41%. The rest 34%, 14% and 11% respondents were used Perch in the kitchen, Perch in the veranda and separate shelter respectively. Even if, the farmers were used the same room with perch to housed chickens, they can produce low amount of products. However they were constructed chicken houses to protect chickens from predators, rain and wind during night time. These agree with report of Kitaly (1998), Meseret (2010), Samson et al., 2010, Melkamu (2013) who indicated that majority of chicken producers housed chickens by sharing the same room with people



particularly overnight time than day time in Ethiopia. In Botswana 35.8 % of the indigenous chicken farmers provided housing of some kind (Dessie et al., 2013).

Table 9: Housing system of village chickens

| Housing system       | Kaffa zone                      |                                     |       | Bench maji zone                |    |   |      |
|----------------------|---------------------------------|-------------------------------------|-------|--------------------------------|----|---|------|
|                      | Highland(N=50),<br>(>2500 masl) | Midland(N=50),(<br>1500- 2500 masl) |       | Lowland(N=50),<br>(<1500 masl) |    |   |      |
|                      | Districts                       |                                     |       |                                |    |   |      |
|                      | Adeyo                           | Chena                               | Gimbo | Guraferda                      |    |   |      |
| Perch in the house   | 21                              | 9                                   | 11    | 21                             | 21 | 2 | 41   |
| Perch in the kitchen | 15                              | 9                                   | 10    | 17                             | 17 | 2 | 34   |
| Perch in the veranda | 8                               | 3                                   | 3     | 6                              | 7  | 0 | 14   |
| Separate shelter     | 6                               | 3                                   | 2     | 6                              | 6  | 1 | 11   |
| Total                | 50                              | 50                                  |       | 50                             | 50 | 0 | 100% |



Fig 7: Perch for ≤ 5 chicken



Fig 8: Perch for ≤ 5 chicken when closed



Fig 9: village cock in front of village house

### 3.5. Type of breed in the study area

Table 10: Type of breed in the study area

| Breed type       | Respondent(No.HHs)           |                                  |                             |           | Total | Mean | SD | %    |
|------------------|------------------------------|----------------------------------|-----------------------------|-----------|-------|------|----|------|
|                  | Kaffa zone                   |                                  | Bench maji zone             |           |       |      |    |      |
|                  | Highland(N=50),(> 2500 masl) | Midland(N=50),(15 00- 2500 masl) | Lowland(N=50),(< 1500 masl) |           |       |      |    |      |
|                  | Districts                    |                                  |                             |           |       |      |    |      |
|                  | Adeyo                        | Chena                            | Gimbo                       | Guraferda |       |      |    |      |
| Local            | 45                           | 24                               | 26                          | 35        | 130   | 43   | 5  | 87   |
| Cross and local  | 3                            | 4                                | 3                           | 2         | 12    | 4    | 1  | 8    |
| Exotic and local | 2                            | 3                                | 3                           | -         | 8     | 3    | 1  | 5    |
| Total            | 50                           | 50                               |                             | 50        | 150   | 50   |    | 100% |

From this study 87% of the households kept local chicken followed by 8% kept cross and local together and 5% of the households kept exotic and local under the same management, which shows Indigenous chicken predominate the other poultry species in the study villages. The result agrees with (Tadelle et al., 2003a). The majority of this chicken were managed under traditional (extensive) system due to lack of availability of feed labor and time shortage to manage them the respondents choose free scavenging system. Form group discussion held with farmers, woman and children are the members of households take responsibility in chicken production in the study area.

### 3.6. Production and reproduction performance of village chicken

The average production and reproduction performance of village chicken in the study area where illustrated in table 3 below:

Table 11: Production and reproduction of chicken in the study area

| Characteristics                      | Kaffa zone                  |                                |       | Bench maji zone            |      |    |
|--------------------------------------|-----------------------------|--------------------------------|-------|----------------------------|------|----|
|                                      | Highland(N=50),(>2500 masl) | Midland(N=50),(1500-2500 masl) |       | Lowland(N=50),(<1500 masl) |      |    |
|                                      | Districts                   |                                |       |                            |      |    |
|                                      | Adeyo                       | Chena                          | Gimbo | Guraferda                  | Mean | SD |
| Average age at 1st egg laying(Month) | 6                           | 7                              | 7     | 6                          | 6.5  | 1  |
| Number of egg per clutch per hen     | 16                          | 13                             | 12    | 15                         | 14   | 1  |
| Number of clutch per hen per year    | 3                           | 3                              | 3     | 3                          | 3    | 0  |
| Hatchability                         | 70%                         | 82%                            | 80%   | 77%                        | 77%  | 2  |

The above table indicates that village chicken in the study area become sexual maturity and laying first egg at an average 6.5 months. The average number of eggs laid per clutch was 14, average number of clutch /hen/ year was 3 times with 77% of hatchability. The average number of chick hatched was 9 and the average number of egg incubated was 11. Farmers in the study area used local chicken for egg incubation. This study is nearly similar with the report of Tadelle et al., 1996 a breeding female chicken attain sexual maturity at the age of 6.8 months and greater from the report of Halima et al., 2007b that a breeding female chicken attain sexual maturity at the age of 6 and the overall mean egg laying performance of hens for the first, second and third higher clutch were 18.0, 21.8 and 25.3 egg respectively. In this study result all mean of egg laying performance of hen is greater than that of Melkamu (2013) report that the overall mean egg laying performance of hens for the first, second and third higher clutch were 17.0, 20.9, and 24.8 eggs respectively at Kimbibit Woreda In North Shoa Zone, Oromia Region. Because farmers provide supplementation feed during rainy season which is available up to 9(nine) month. The above table indicates that village chicken in the study area lays about 14 eggs /hen/ clutch and number of clutch per hen per year is 3. The result disagree with the report of Melkamu (2013) that 13 eggs /hen/ clutch, this variation is may due to free water availability and feed supplementation of village chicken in the study area.

### 3.7. Chickens and egg price in the study area

Table 12: Chickens and egg price in the study area

| Sold variables                 | Kaffa zone                      |                                     |                               | Bench maji zone |      |      |
|--------------------------------|---------------------------------|-------------------------------------|-------------------------------|-----------------|------|------|
|                                | Highland(N=50),(<br>>2500 masl) | Midland(N=50),(1<br>500- 2500 masl) | Lowland(N=50),(<1500<br>masl) |                 |      |      |
|                                | Districts                       |                                     |                               |                 |      |      |
|                                | Adeyo                           | Chena                               | Gimbo                         | Guraferda       | Mean | SD   |
| Adult Cock<br>(>20wks)         | 80                              | 72                                  | 74                            | 70              | 75   | 2    |
| Adult Hen,<br>layer (>20wks)   | 60                              | 52                                  | 54                            | 50              | 54   | 0    |
| Pullet ,Cockere<br>l (8-20wks) | 40                              | 40                                  | 40                            | 35              | 38   | 0    |
| Egg                            | 2                               | 2.25                                | 2.25                          | 1.75            | 2    | 0.25 |

There was high chicken and egg price variation due to festivals based on their coat cover of the bird. The average price of adult cock, hen and young chicken were reached 75, 54 and 38 respectively; and the price of egg was reached 2 birr during non-fasting period and 2.25 birr at festival time, so the producers were fetched good price during festival time. There is market problem in the study area because of absence of good infrastructures like transportation facilities and the proximity to Boka, Ginbo, Chena and Biftu towns; moreover, different traders were came from Jimma, Bonga, Mizan-aman and Tepi to bought chickens and their products. Keeping village chicken by small holder for cash income to purchase food items and to cover other family expenses as the report of Halima et al., 2007 b, small holder village chicken owners found in different part of the country sale chickens and eggs to cover school fee, to purchase improved seed and to get cash for grain milling services.

### 3.8. Diseases and predators

Table 13: Causes of birds mortality and season of occurrence

|   |   | Kaffa zone                  |                                |                            | Bench maji zone |           |
|---|---|-----------------------------|--------------------------------|----------------------------|-----------------|-----------|
|   |   | Highland(N=50),(>2500 masl) | Midland(N=50),(1500-2500 masl) | Lowland(N=50),(<1500 masl) |                 |           |
|   |   | Districts                   |                                |                            |                 |           |
| Variables                               |   | Adeo                        | Chena                          | Gimbo                      | Guraferda       | Overall,% |
| Causes of Village chicken mortality (%) | Birds of prey”chulule”                          | 26.4                        | 29                             | 30                         | 24              | 27        |
|   | Cats and dogs                                   | 5                           | 11.8                           | 9.8                        | 14.3            | 10        |
|   | Wild animals ”fox, shelemetemate, aner(halaro)” | 10.4                        | 6                              | 1                          | 8.2             | 7         |
|   | Diseases  | 56.7                        | 47                             | 50.5                       | 45              | 50        |
|   | Accident  | 2                           | 6.2                            | 8.7                        | 8.5             | 6         |
| Types of diseases (%)                   | Newcastle                                       | 56                          | 51                             | 53                         | 48              | 52        |
|   | Fowl pox  | 12                          | 18                             | 21                         | 16              | 18        |
|   | Coccidiosis                                     | 27                          | 23                             | 19                         | 25              | 23        |
|   | Others  | 5                           | 8                              | 7                          | 11              | 7         |
| Season frequently disease occurred (%)  | Sep-Nov.  | 12.6                        | 9                              | 17                         | 7               | 11        |
|   | Dec-Feb.  | 4                           | 2.5                            | 0                          | 14              | 6         |
|   | March-may                                       | 2                           | 0.5                            | 0                          | 3               | 1         |
|   | June-Aug.                                       | 81.4                        | 88                             | 83                         | 76              | 82        |

The study revealed that New castle Disease (NCD) was identified as more popular and economically significant infectious viral disease of chickens in the study. The major causes of death for village poultry production were commonly disease (mainly New Castle Diseases locally known as "Fengil", followed by predation. High incidence of chicken diseases, mainly Newcastle Disease (NCD), is the major and economically important constraint for village bird's production system [8]. Mortality of village birds due to disease outbreak is higher during the long rainy season, mainly in June-August (82%) and September-November (11%). Serkalem et al., 2005. Gebremedhin (2007) also reported that NCD is one of the major infectious diseases affecting productivity and survival of village chicken in the central highlands of Ethiopia. It was also reported by Dessie and Jobre (2004) that NCD was the single major health constraint, which cause heavy mortality and morbidity to village chicken and affects productivity of the system in the country which is also agrees with the finding of (Nigussie et al., 2003, Serkalem et al., 2005.,)[40,46 and Nwanta et al., 2008).

Predators were listed alongside diseases as major cause of bird's death. The predation is strongly associated with the rainy season. The predators include primarily birds of prey such as vultures, which prey only on chicken and wild mammals such as fox,"shelemetemate",aner(halaro), which prey on mature birds as well as chicks(Dessie et al., 2004). Predators such as birds of prey (locally known as "Culullee") (27%), cats and dogs (10%) and wild animals (7%) were identified as the major causes of village poultry in Kaffa and benchmaji zone of Ethiopia. The result is in line with the finding of Hunduma et al., 2010, that Predators such as birds of prey (locally known as "Culullee"), cats as well as dogs and wild animals respectively in decreasing order were identified as the major causes of village poultry in rift valley of Oromia, Ethiopia. The major routes of contamination and spread of NCD from village to village are contact between chicken during scavenging and exchange of chicken from a flock where the disease is incubating and during marketing. Halima et al., 2007 b also reported that predation is one of the major constraints in village chicken production in northwest Ethiopia.

Research work in some African countries such as Benin (Chrysostome et al., 1995, Burkina Faso (Bourzat et al., 1990, Mauritania (Bell et al., 1990 and Tanzania (Yongolo et al., 1996, reported that Newcastle is the most devastating disease in village chickens. The common disease reported in the study area was similar with the previous findings that were reported 15 years back.

However, Newcastle became the major reason for the loss caused by disease; this mainly because farmers in the area have no proper prevention mechanism and do not have proper vaccination program to their chicken. There is also a favorable condition for the transmission of the diseases, which is likely associated with the nature of the rearing practice. This is because local keepers in the surveyed area rear scavenging poultry with, relatively no separate housing, no veterinary services and high degree of contact with the neighbor chicken.

### 4. CONCLUSION AND RECOMMENDATION

Generally as in the other parts of the country, village chicken management practices on feed and feeding need improvement. This factor has direct impact in productivity and decreasing the direct benefit of the farmers. Scavenging with occasional and seasonal supplementary feeding of homegrown grains and household scrubs (food refusals) is identified feed and feeding system in the study area.

The chickens share the same perch room with the family house shows focus should be given on housing system for making separate shelter for better poultry production system. The result of the current study showed that majority of chicken at the study area are local breed and their productivity performance can be enhanced by relatively simple changes in improve breeds. Indigenous village chickens are raised mainly under different their life threatening problems like epidemic disease and predator's. A periodic disease outbreak (epidemic) is common limiting factors that affect performances of village chickens in in the study area. Disease like New castle Disease (NCD) is a major health problem of village chickens.

It is suggested that feed, feeding and watering practice of village chicken producers can be improved through development strengthening of agricultural extension services, through trainings and advisory services. To transform the existing subsistence feed and feeding system to balanced and optimum one intervention options need to base on studied result of semi-commercial feeding system. For the long-term change in housing system, the researchers, agricultural office and producers should work in collaborating way to increase independent poultry house construction.

Ultimately, attempt should make to shift the production paradigm to improved backyard production along with a holistic supports of services such as credit and marketing to make it productive and profitable. It is suggested that chicken and egg marketing of village chicken producers can be improved through development of market information system at farmer's level and strengthening of agricultural extension services, through trainings and advisory services.

To improve the current situation: Owner need to be introduce with the basic knowledge of poultry health management, Using data generated from this study, which could be serve as basic line information, strategic disease control scheme should be develop to fight Causes of economically significant infectious viral disease of village chickens and related sources their mortality.

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